

# Curriculum Overview – COMPUTER SCIENCE

Please click on selected link for further details

## **Key Stage 3**

Year 7

Link to the resources

<https://www.thenational.academy/teachers/programmes/computing-secondary-ks3/units>

Units we cover:

1. Clear messaging in digital media
2. Networks from semaphores to the Internet
3. Programming essentials in Scratch – part I
4. Modelling data using spreadsheets
5. Programming essentials in Scratch – part II
6. Using media – Gaining support for a cause

Year 8

Link to the resources:

<https://www.thenational.academy/teachers/programmes/computing-secondary-ks3/units>

1. Layers of computing systems
2. Developing for the Web
3. Representations – from clay to silicon
4. Mobile app development
5. Introduction to Python programming

Year 9

Link to the resources:

<https://www.thenational.academy/teachers/programmes/computing-secondary-ks3/units>

1. Python programming with sequences of data
2. Data science
3. Python next steps
4. Introduction of cybersecurity
5. Algorithms

## Key Stage 4 – GCSE AQA Exam Board 8525:

For detailed information please select the link above to view AQA specification

Subject content link

<https://www.aqa.org.uk/subjects/computer-science/gcse/computer-science-8525/specification/subject-content>

### Topics:

- 3.1 Fundamentals of algorithms
- 3.2 Programming
- 3.3 Fundamentals of data representation
- 3.4 Computer systems
- 3.5 Fundamentals of computer networks
- 3.6 Cyber security
- 3.7 Relational databases and structured query language (SQL)
- 3.8 Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy

## Key Stage 5 – A Level OCR Exam Board:

Content overview <https://www.ocr.org.uk/qualifications/as-and-a-level/computer-science-h046-h446-from-2015/specification-at-a-glance/>

### Component 01: Computer systems

Students are introduced to the internal workings of the (CPU), data exchange, software development, data types and legal and ethical issues. The resulting knowledge and understanding will underpin their work in component 03.

It covers:

- The characteristics of contemporary processors, input, output and storage devices
- Types of software and the different methodologies used to develop software
- Data exchange between different systems
- Data types, data structures and algorithms
- Legal, moral, cultural and ethical issues.

### Component 02: Algorithms and programming

This builds on component 01 to include computational thinking and problem-solving.

It covers:

- What is meant by computational thinking (thinking abstractly, thinking ahead, thinking procedurally etc.)
- Problem solving and programming – how computers and programs can be used to solve problems
- Algorithms and how they can be used to describe and solve problems.

### Component 03: Programming project

Students are expected to apply the principles of computational thinking to a practical coding programming project. They will analyse, design, develop, test, evaluate and document a program written in a suitable programming language. The project is designed to be independently chosen by the student and provides them with the flexibility to investigate projects within the diverse field of computer science. We support a wide and diverse range of languages.